VALLEY EMERGENCY COMMUNICATIONS CENTER
FORMAL PROJECT EVALUATION REPORT

VECC AND CDPD

A Multi-Jurisdictional Model for Cellular Digital Technology
In An
Integrated Public Safety Telecommunications Network

Federal Grant Award Number 49-40-96064

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FORMAL PROJECT EVALUATION

Valley Emergency Communications Center, VECC, is a multi-jurisdictional police, fire, and 9-1-1 emergency medical communications program for six police departments and ten fire departments, employing approximately 1,200 personnel. Located in the Salt Lake Valley, the Center was formed to integrate public safety services under one umbrella. The agencies participating in VECC are Midvale Police Department, Midvale Fire Department, Murray Police Department, Murray Fire Department, Salt Lake County Fire Department, Sandy Police Department, Sandy Fire Department, South Jordan Police Department, South Jordan Fire Department, West Jordan Police Department, West Jordan Fire Department, West Valley Police Department, West Valley Fire Department, Bluffdale Fire Department, Draper Fire Department, and Riverton Fire Department.

The VECC CDPD project was established to demonstrate that Cellular Digital Packet Data can be applied on a wide scale to access the National Public Safety Information Infrastructure. CDPD was selected over other RF networks because, for public safety applications, it made the most sense--it offered the broad coverage needed to be able to follow suspects out of primary service areas. CDPD, often called Wireless IP, is a public system that uses existing cellular networks to send data packets. It offers a doubly secure transmission with AT&T Wireless Services, the service provider for VECC's system, and VECC's software providers using the government Data Encryption Standard (DES) and provides RC4 encryption over the airlink. CDPD does not conflict with cellular voice because it operates at a different dedicated frequency which at 14.4KBPS is the fastest wireless data network to date. Making it even more versatile is its open standards, or TCP\IP Internet protocol, which has allowed VECC to rapidly network all of its participating agencies.

This CDPD project has allowed VECC and its users the ability to access any information base, federal state, and local, that is accessible to cellular service. In addition, the users have access to the Internet and can transmit messages through E-

mail. Since names, addresses, criminal histories, and other sensitive data are transmitted in encrypted form, privacy of information is protected and insured. The project has demonstrated how a well planned, cooperative, communications system can improve responses in emergencies, at the same time conserving scarce radio frequency allocations.

It has been two years since the project started, and the formal evaluation is now complete. Listed below are the criteria outlined by the CDPD Agency Coordination Committee to determine the success\failure of the project and their evaluation of each aspect.

MONITOR AIR TIME USAGE FOR COST EFFECTIVENESS

Essentially, air time usage has not decreased on the regular police channels. The service channel graphs indicate a decrease in air time on the service channel, since the officers can run their own information on the MDT's and access data bases for information which they would otherwise have to wait for a dispatcher to provide. Appendix 1 charts requests which were made to the service channel during August 1995, a period in which there were not MDT's in use; August 1997 data indicates the beginning of the MDT program requests; August 1998 data indicates the number of requests made well into system implementation. These numbers portray an obvious workload decrease since inception of the MDT program, despite the variables of increased population and call growth.

The committee originally intended to compare radio air time use versus a cost per Kbit over the CDPD system. The major savings realized by use of the CDPD system is that VECC has not had to increase staffing to handle the increased volume of requests by officers for information from the field. One dispatch position, staffed round the clock, requires an additional five employees, plus additional equipment and console costs. The CDPD project has enabled the field officers to obtain the information they require by use of their laptops, thus decreasing the workload on the service request channel and the main dispatch channels for each city.

TRACK RECORDS\HITS

The committee completed a mathematical comparison of specific crime categories pre CDPD and post CDPD as indicated by the attached charts from each of the participating agencies. The Appendix 2 table indicates the four categories considered and the percentage of increase on recoveries for each department; Appendix 3 charts Recovered Stolen Vehicles; Appendix 4, Warrants; Appendix 5, Vehicle Impounds; and Appendix 6 charts totals in each area of comparison, also including an arrest category for the West Jordan Police Department. They are the only department which had

enough active units using the CDPD system during 1997 to run a report for comparison.

DISPATCH--RATIO OF VOICE VS. VOICELESS

We are presently using voiceless dispatching for low priority calls only. Of the number of low priority calls, 39.4% are being dispatched voiceless, broken down by agency as follows:

Midvale	14.8%
Murray	13.7%
West Jordan	27.5%
West Valley	24.3%
Sandy	11.6%
South Jordan	8.1%

These numbers are very significant when considering the following facts: 1) Low priority calls are averaging approximately 45.7 percent of our total Police call volume; 2) A low priority call can account for as much radio time as any other dispatcher initiated call; 3) Only 33 percent of our total agency units have MDT's installed.

BCI CHANNEL--RATIO OF VOICE VS VOICELESS

Information requests from BCI are run on the service channel. Therefore, statistics for this area are included in Appendix 1, which charts pre and post CDPD data.

EQUIPMENT USAGE QUESTIONNAIRE

The CDPD Coordination Committee members worked together to develop a questionnaire for the field officers and the dispatchers utilizing the program. A sample of the questionnaire provided to field officers is included as Appendix 7; the dispatcher questionnaire is Appendix 8. The individual responses to the survey are included as Section 2 Attachments. Basically, the results of the responses are summarized below.

FIELD OFFICER QUESTIONNAIRE RESPONSES

1. Has the access to information changed?

Of the participants queried, 29 felt that information accessibility on the CDPD system was about the same. However, 52 felt accessibility had improved, with 59 participants feeling that it had improved drastically. The ability of the officers to run their own motor vehicle registration information, driver's license checks, and wants

and warrants has dispensed with waiting for radio time on the service channel; they have easier access to the state system; it is easier to respond to calls for service by citizens when in a specific vicinity as indicated on the MDT; they are more apt to run suspicious vehicle inquiries because it is faster; residence history and hazard information is now available; they have good access to other agencies; they can get the info as they need it and not have to wait; the ability to read the information given to dispatch by complainants is helpful; and finally, the officers felt that the information on the supervisor status screen is valuable.

2. Has the content/completeness of information changed? Rate the accuracy and speed of the information coming back.

37 felt that the accuracy of the information was about the same; 80 felt they had seen definite improvement in accuracy; 16 individuals felt there was drastic improvement in the accuracy. As to the speed of the information, 57 responded that it was about the same; 46 felt it had improved; 19 felt it had improved drastically. However, 19 survey participants felt the speed of the return information was slower than previously. They complained that the updates were slow, especially on the IBM Wireless Modem, and responses at specific times of the day tended to be slower, usually in the late afternoon when a larger number of users were logged on the system. Many of the users complained that their computers were too slow, thus making the information process tedious. Positive comments included the fact that the officers felt having the suspect descriptions, names, and addresses always on the screen was a great benefit--it was a plus to not have to write the information down and wonder if it was written down correctly.

3. Has the amount of time you are on your voice radio changed?

43 participants felt that they were spending the same amount of time on the radio; 43 felt they had reduced their air time considerably, with 46 feeling that air time had seen a drastic reduction. Even though voice dispatch is still necessary on high priority calls, the officers were appreciative of seeing the information on computer for themselves; they like seeing the narrative for the information which dispatch personnel don't normally provide; some officers felt they had seen a 25 percent reduction in their radio airtime.

4. Has Messaging changed?

Of the survey participants, 39 haven't noticed much change; 50 have noticed improvement, and 43 have seen drastic improvement. The officers liked having the ATL's go through messaging so they can refer back to the information. The messaging feature also provided them with the ability to be informed as to occurrences on other shifts. They like access to information for outside agencies.

5. Have MDT's changed your ability to do your job?

26 officers commented that they haven't noticed a change; 58 feel there is definite improvement; 63 feel there is drastic improvement in their job performance ability; only

3 survey participants felt that the MDT's had decreased their efficiency in job performance. Comments were that the MDT was an excellent tool which definitely improved job performance. The officers said they check more suspicious persons and vehicles because of the ease of access. They said the MDT is a great investigative tool which cuts down on phone and radio time, and they can't live without it. They can't remember how they survived before implementation of the CDPD system. The history information is a useful tool in resolving situations. Access to information has changed their ability to do the job in a very positive way. The only complaint was that time spent on data entry has taken away from proactive patrol work.

6. Has vehicle enforcement changed because of the MDT? Have vehicle impounds increased because of the use of the MDT?

33 individuals felt there was no change; 55 saw definite improvement; 52 felt there was drastic improvement. As to an increase in the number of vehicle impounds, 39 said the numbers are status quo; 51 have seen an increase, and 43 feel they have seen a definite increase; only 5 felt they have seen a below average response on impounds. Some officers are running all of their impounds on the MDT, thus avoiding tying up valuable air time. They find many fraudulent plates and stickers. The MDT provides the ability to run information prior to arriving on calls or making stops, thus increasing officer safety. The ability to run vehicle registration and warrants or stolen vehicles is invaluable. The officers are getting a lot of uninsured motorists and vehicles that are improperly registered off the street, and work is twice as fast with a computer. Having access to state files for motor vehicle information is valuable.

7. Has your level of communication with dispatch changed?

34 participants saw no change; 73 participants felt communication had improved; 21 felt they had seen definite improvement; 4 felt it had decreased the level of communication. The officers felt it was easier to perform a self-initiated activity with the MDT. They received more specific information over the computer than the radio, thereby making less mistakes by reading the information themselves. ATL's have improved greatly. They feel they could use voiceless dispatch more without the radio--currently VECC dispatches via both on low priority calls. The ability to ask questions via messaging cuts down on air time.

8. Has your access/communication with other agencies changed? (Improved inter-agency case report sharing?)

47 respondents felt the status was about the same; 47 felt communication had improved; 32 felt it had improved considerably. Several respondents felt the method of communication with other agencies had changed, but the communication itself had not improved--they would like to see more case report sharing. Most survey participants said the ability to broadcast notification of suspects instantly to all agencies was a big plus. Also, the county-wide ability for sending ATL information is positive. The messaging feature with outside agencies is wonderful, especially in attempting to locate stolen vehicles.

9. Has Messaging changed your ability to perform inter-departmental communications?

23 participants felt inter-departmental communication was about status quo; 60 felt things had improved; 59 felt it had improved considerably. Comments included that messaging frees up air time; it is easier to make contact with your recipient; it eliminates the need to put confidential information over the radio; there is more accuracy in using the computer for messaging; it takes less time than using paperwork for memos, plus it provides the ability to contact other individuals not on the same shift; being able to verify when the message is received is very helpful. Some officers felt that the meaningless messages used for chitchat needed to be monitored.

10. Has your ability to transfer/receive secure information changed?

22 felt the transfer of information was basically the same; 65 felt things had definitely improved; 51 thought information transfer had drastically improved. Comments included the fact that the ability to check criminal histories was beneficial. Not having to broadcast sensitive information over the air was extremely beneficial, since suspects can't yet scan computers. The MDT has increased officer safety and enhanced the ability to quickly apprehend suspects.

11. In your opinion, does the increased access to information provided by the MDT lead to increased officer safety?

22 thought officer safety had not increased; 60 felt increased officer safety had been achieved; 44 felt it had drastically improved. There were 5 negative responses which presented the point of view that the MDT has affected the safe operation of a police vehicle. The majority of respondents felt that access to more information definitely increases officer safety. However, the officers need to be careful not to focus totally on the computer during high or unknown risk situations. The general consensus was that the computer can be a distraction while driving and attempting to watch suspects--officers must remain alert to their surroundings. A second pair of eyes for each officer would be invaluable! There was also one suggestion to mount the computer higher in the vehicle so the officer's head is not always down.

12. In your opinion, has mobile dispatching, including messaging, improved job efficiency and communication between the officers and dispatch?

19 felt things had not changed much; 53 felt efficiency and communication had improved, with 59 seeing definite improvement; 8 felt communication had decreased between officers and dispatch. Comments included the viewpoint that CDPD is a great concept which has definitely improved communications. Having enough budgetary funds to provide state-of-the-art equipment, i.e. computers, modems, etc., would be an asset. The officers said it was valuable tool--they'd hate to be without it now. They can concentrate on driving and officer safety because they don't have to worry about copying the dispatch information accurately. Having access to increased information has made it Impossible to do the job without the MDT. It is a valuable tool for supervisors. One officer felt the dispatchers assume they have to do

less now, supposing that every car has a computer.

In general, the survey participants commented that additional training to insure that the officers and VECC are getting the same information on use of the system would be helpful. Faster computers would be a dream come true! The ability for information exchange between officers on case sensitive material rather than having to meet in person has increased officer availability to the citizens.

DISPATCH RESPONSE TO QUESTIONNAIRE

1. Has the access to information changed?

11 dispatchers felt access had changed and improved; 4 felt it had declined. They felt additional training was needed, especially for the fire units on the system. Additional comments were that the screens are difficult to access quickly. However, Increase of information to the field personnel is valuable for them.

2. Has the content/completeness of information changed? (Accuracy and speed)

9 dispatchers felt the accuracy of the information was improved through use of the MDT; 4 felt it had declined slightly; 11 felt the information relay was quicker; 2 felt it had slowed the process down. Many dispatchers felt the units were not being used to their potential due to lack of training. Officers rarely update narratives with a disposition, but routine clearing of calls is nice. Having the officers clear calls on a slow channel is fine, but on a busy channel the call gets lost and dispatch loses track of it.

3. Has the amount of time you need to repeat information (i.e. address, call type, etc.) changed?

6 participants felt repetition was basically status quo; 6 felt they were repeating things less, and 3 felt they were doing more. In most cases when the officer uses an MDT, nothing needs to be repeated. Officers should have dispatch update the narrative. For those units using the system, it has definitely cut down repeat information.

4. Has the use of Messaging changed?

All of the dispatchers felt messaging had definitely changed, since the only method of use previous to CDPD was through the CAD. However, they felt it was too often used inappropriately. The officers and the supervisors using it within individual departments has cut down considerably on air traffic. The dispatchers felt changing screens to type an ATL and then flipping back to display is very time consuming and tedious.

5. Have MDT's changed your ability to do your job?

5 felt there was no change; 8 felt it had improved job performance; 2 felt it had decreased. Comments were that it enhances the job; although difficult to learn on the dispatch end, once you become adept it is very helpful. The officers frequently jump

calls before dispatch can do the necessary confirmations for callbacks. Often the officers do not read the narratives and make incorrect responses. A big plus is that when a high priority incident is occurring, you can dispatch other units with the simple push of a button, freeing up air time for the priority event.

6. Has dispatch involvement in traffic stops changed because of the MDT?

7 felt it had not changed, 1 felt it had changed slightly, and 2 felt that it had decreased. The service channel workload has lessened because the officers are running their own information. Traffic stops become an officer safety issue if the officers don't call out with dispatch.

7. Has your level of communication with the field units changed?

6 felt things were status quo; 8 felt it had definitely changed, with 1 feeling that the level of communication had declined. Radio communication has dropped by 30 percent. Radio traffic is considerably less on non-priority calls.

8. Has your access/communication with other agencies changed?

The dispatchers felt there was no change for them in communication with other agencies.

9. Has Messaging changed your ability to perform inter-departmental communications?

6 felt things were the same; 2 felt it had improved, and 3 felt it had declined. The dispatchers use the CAD system rather than the messaging. The ATL program through the MDT is great, however, and saves air time. The dispatchers felt they aren't using the feature to the extent they could.

10. Has your ability to transfer/receive secure information changed?

5 felt things were the same; 5 felt information transfer had improved; 5 felt it had improved drastically. The ability to provide details on suspects to officers so suspects cannot pick up the information on their scanners is helpful. Dispatch feels it is more time consuming to type information rather than talk on the phone. It is very helpful on radio secure calls and hazard or medical information.

11. Does the increased access to information provided by the MDT lead to increased productivity?

4 dispatchers felt productivity was status quo; 6 saw definite improvement, and 3 felt that their productivity had declined. In some instances, productivity has decreased while waiting for non-work related return messages. In the opinion of dispatch, lack of training is the problem, for both officers and dispatch.

12. In your opinion, has mobile dispatching, including Messaging, improved job efficiency and communication between the officers and dispatch?

7 felt it was about the same; 7 felt there was improvement. They suggested that

more work is needed to help fire units get on line. It's great to have field units dealing with calls that are holding, and to have them clearing routine calls. Communication between officers has improved.

SYSTEM MESSAGING

This feature of the system has been widely used by all participants with favorable results. We have even seen it used at the administrative management level of each department, as many of the police and fire chiefs transmit department-wide information or congratulations and thanks to everyone involved in a major case, from the officers working the case to the dispatchers involved in the initial stages.

The CDPD messaging feature is also used throughout the state by anyone having access to the system. We have included a list of users who were logged on to the system during the last week of December as a sample of its widespread use, included as Appendix 9.

After the introduction of the messaging feature in the implementation phase, it became readily apparent that firm policies on its use would need to be developed and enforced in each department. Its convenience of use and accessibility made it a forum for personnel desiring to chat amongst constituents, usually concerning personal matters totally unrelated to the work environment. Each department now monitors this feature to ensure that it remains valuable for the reason it was intended.

TRACK SELF-INITIATED ACTIVITIES BY USERS

When dispatch creates a call, the dispatcher utilizes the code "OV" (on view); when the MDT creates a call, it utilizes the code "SI" (self initiated). Since inception of mobile dispatching on August 13, 1997, self initiated calls have reached their current peak of 2.6% of total self initiated calls. This is a significant number considering these facts: 1) Self initiated calls are averaging approximately 33 percent of our total Police call volume; 2) A self initiated call can account for as much radio time as a dispatcher initiated call; 3) Only 33 percent of our units have MDT's installed.

SYSTEM RELIABILITY\FAILURES

The dependability of a CDPD system rests upon many factors, but overall it is a very reliable transport medium for data. With a well planned system and contingencies for some failure, you can obtain almost 100% reliability.

AT&T Wireless Services has been the provider of our CDPD system throughout the

project. During this time we have experienced three network failures. Each of these were the result of faulty vendor equipment and were able to be remedied within hours.

In addition to the network failures, there have been instances when the connection to either West Jordan or VECC, from AT&T, has failed. However, the redundant routes built into the network immediately switched all traffic to the alternate connection with no loss of communications. It is difficult for us to accurately evaluate the number of times this scenario has occurred since it happens behind the scenes within the network.

In the initial startup phase of the project, we were able to identify areas that had less than desirable CDPD coverage. When those sites were brought to the attention of AT&T, steps were taken to correct the problem. Additional sites were added and others were fine tuned, resulting in improved coverage for the VECC area. Several VECC administrative personnel have traveled the country attending conferences wherein CDPD was a topic of discussion. They experienced a great deal of success in accessing the VECC CAD system through CDPD from cities as far away as Washington, D.C., Orlando, Oahu, Portland, Phoenix, Chicago, Richmond, and Dallas.

HARDWARE RELIABILITY\PROJECTED LIFE SPAN

The projected life span of the system varies, depending on the element to which you are referring. The AT&T CDPD equipment is constantly being updated; as end users, we anticipate that the CDPD service will always be available and current with the most advanced technology. On the user end, we subscribed to purchasing the servers for the system based on the assumption that they will be replaced or upgraded every three to five years. However, in the last 18-24 months, we have not witnessed any degradation of the server--there is still sufficient disk space and the processor speed remains adequate. No significant changes to this situation have been projected. However, with computer technology on a high paced evolutionary track, it would be anticipated that the server should still be updated or replaced within the three to five year projected time frame. This assures that the technology being used is still close to cutting edge and will not become unserviceable or incompatible with software or hardware upgrades. With a commitment to continual preventative maintenance and care, these systems should provide solid, reliable service throughout their use period. Workstations, routers, hubs, switches and fire walls can all be applied to the same philosophy.

In the public safety field, a different philosophy prevails for those using the wireless workstations. Factors such as environmental conditions, treatment by users, and commitment to resources can drastically alter the life span of equipment. If initial purchases are made based on cost without regard for quality, the equipment life span will be drastically reduced. Several of the VECC agencies initially purchased cheaper,

less reliable equipment to allow them to get involved with the CDPD program. Now that they have been involved with the system for two years and are able to assess equipment dependability and budgetary costs, many of them are moving forward to purchase more reliable equipment. Typically, the above philosophy of replacing equipment every three to five years can be applied in the field. However, the ability to achieve this projection varies, depending on the quality of the equipment and its ability to withstand extreme use, extreme environment, and use by multiple individuals with varying degrees of commitment for maintaining equipment. The technical representatives from each agency serving on the CDPD Agency Coordination Committee selected three different modems for the initial equipment purchase--IBM Wireless, Sierra Portable, and Sierra Trunk Modem. Their recommendation upon evaluation of the equipment is to use the Sierra trunk mount modems for all vehicles, with the exception of those individuals (detectives, sergeants) who require portability for their laptops. They felt that the Toshiba laptops purchased initially, though not as durable as units purchased later in the project, performed exceptionally, especially considering the reasonable price per unit.

It has been calculated that the speed of computer processors doubles every 18 months. Based on this assumption, a 3-5 year equipment life span expectation appears to be conservative. Today, the meaning of life span does not necessarily apply to using equipment until it fails to work at all. With advances in electronics and the computer industry, life span often refers to using equipment until it is no longer feasible to maintain it because the cost of upgrading it or maintaining it is greater than the cost of replacement. Although the equipment functions perfectly at a given level, it may not function at the level required, based on software changes, procedural changes, or the malfunctioning of parts that are no longer available (technical obsolescence). These factors are all indicators of life span in today's electronics.

COVERAGE AREA EVALUATION

During the initial stages of the project when the pilot laptop units were brought on line, we experienced a few problems with coverage. The Sandy City area and certain sites in West Jordan had weak coverage during specific times of the day. However, the AT&T Wireless Services representative assigned to the project maintained constant contact with the agency representatives. Whenever a coverage problem was reported, he took the necessary steps to insure that the problem was resolved. AT&T added new site antennas in an effort to meet the expectations of the users. They have met and exceeded expectations of the Coordination Committee and have been very customer oriented throughout the project.

COST ANALYSIS OF NON-CDPD SYSTEMS

While CDPD has been referred to as the cutting edge of wireless communications, it is not the most expensive technology, as would normally be expected. In a white paper titled "CDPD for Public Safety", authored by Charles Vlcek and published by AT&T Wireless Services in May of 1997, a comparison of the costs associated with many non-CDPD systems is made to the cost of a CDPD system. The first realization of cost effectiveness in CDPD over PMR (Private Mobile Radio) comes in the initial purchase of equipment. PMR equipment is usually proprietary and thus much more expensive to purchase. Producers of PMR equipment often require use of proprietary protocols within their equipment. Therefore, availability of equipment vendors usually centers around a single manufacturer. However, CDPD uses standard, common protocols for which a large variety of equipment manufacturers make equipment. There is a substantially bigger pool of vendors to buy equipment from and thus a more robust competition among the vendors to provide equipment at lower costs. Additionally, a CDPD system functions as a single network while using an eclectic array of equipment, while PMR generally has to be overly consistent with the make and model of equipment used throughout the network.

In the white paper referred to above, the price models used show that CDPD can be implemented at slightly more than 50% of the cost of PMR. It further indicated that PMR costs such as equipment and maintenance are fairly level. That is to say, they are not changing because the technology is established, and being proprietary does not adhere to the evolutionary scale that other computer technology is on. With CDPD, we are still in an area that is somewhat new and is always being advanced. With the method not being proprietary, there is a much larger group of companies out to "make their mark" in the technology, thus offering a much greater field of competition which results in lower costs. Also, CDPD access costs have been, and continue, dropping. This is most likely the result of an ever growing number of users sharing the costs of operating the system. The White Paper indicated that if this trend continues, "the amortized cost of PMR mobile data systems ownership will never reach parity, on a life-cycle cost basis, with CDPD. The CDPD life-cycle cost is likely to outperform all alternatives in the foreseeable future."

FUTURE SYSTEM EXPANSION

VECC plans to continue improving the useability of the system, striving to improve the quality, quantity, and continuity of the information upon which the police officers and firefighters base life-saving decisions. They will especially focus on the fire departments, since those fire agencies participating in the VECC system thus far have been hampered throughout the course of the project by budget restraints. Installation of a backup server is also a future goal, as is incorporating graphical mapping. The possibility of scanning mug shots, fingerprints, and drivers license bar codes to the MDT's is also an exciting option. The VECC management plans to carefully scrutinize the system features which are not currently being utilized and incorporate those

aspects which will enhance operations and performance.

COMMUNITY IMPACT

One of the biggest impacts of the VECC CDPD system on the community was realized recently when the local telephone company, US West, experienced a major outage at one of their satellite offices. Approximately 50,000 residents in the southern portion of the Salt Lake Valley, especially West Jordan, Midvale, and parts of Sandy, were without telephone service for 24 hours. The officers were able to enter calls through the mobile data system when citizens reported in to the Community Policing Office and were able to access the VECC CAD computer with their laptops. This incident stressed the importance of an alternative means of communication, especially valuable when the routine channels of communication broke down.

The citizens residing in the communities served by these agencies have benefitted from faster response times, coordinated public safety response, cooperation between agencies, and reductions in costs per call for service. Public safety officers responding to any call for help have had the fastest and most reliable information available.

SUMMARY

In this time of extreme competition for available wireless spectrum, public safety dispatch operations must take advantage of every available piece of spectrum, public or private. CDPD connectivity offers the best price performance option for mission critical wireless data communications at the lowest initial cost. The VECC CDPD system will demand careful planning, monitoring, and management to assure increased productivity and improved public safety services, thus creating an enhanced quality of life for all Utahns. VECC has proven itself a leader in telecommunications and information technology, taking the initiative of dealing with the complex issues associated with this new environment.

The VECC CDPD system will continue to prove its effectiveness as the Salt Lake Valley hosts the 2002 Winter Olympic Games. This event will provide an opportunity for VECC to be the first agency ever to use the CDPD model to manage the public safety response associated with the games.

VALLEY EMERGENCY COMMUNICATIONS CENTER
FORMAL PROJECT EVALUATION REPORT

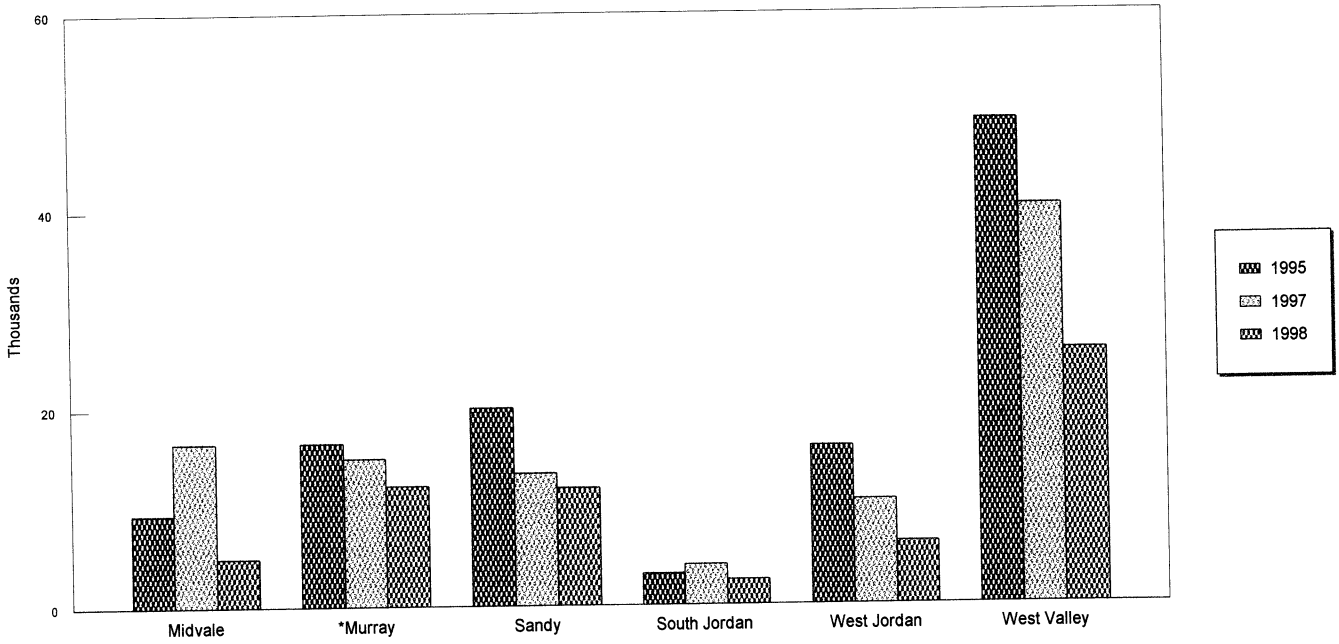
APPENDICES

VALLEY EMERGENCY COMMUNICATIONS CENTER
FORMAL PROJECT EVALUATION REPORT

APPENDICES--TABLE OF CONTENTS

Appendix 1

Valley Emergency Communications Center
Service Request Information
1995 -1997



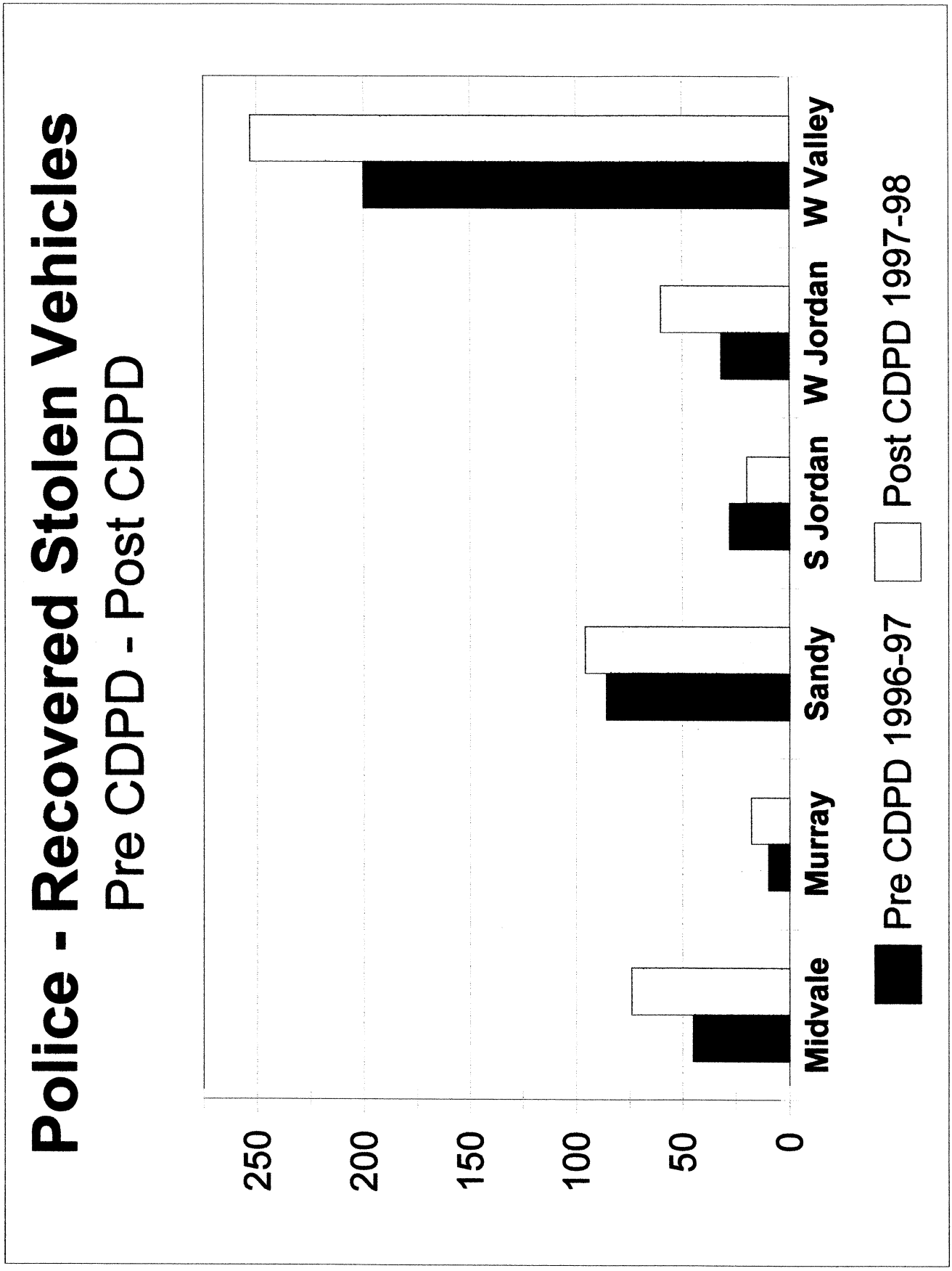
	Aug 1995	Aug 1997	Aug 1998	+ or -	1995	1997	1998	+ or -	Workload 1997*
Midvale	1147	392	408	-64%	9337	16547	4896	-48%	11%
*Murray	1850	1250	1016	-45%	16547	15000	12192	-26%	8%
Sandy	1895	1117	992	-48%	20058	13404	11904	-41%	4%
South Jordan	401	342	212	-47%	3175	4104	2544	-20%	10%
West Jordan	1895	852	524	-72%	16025	10560	6288	-61%	11%
West Valley	5475	3361	2140	-61%	49050	40332	25680	-48%	7%
	12663	7314	5292	-58%	114192	99947	63504	-44%	7%

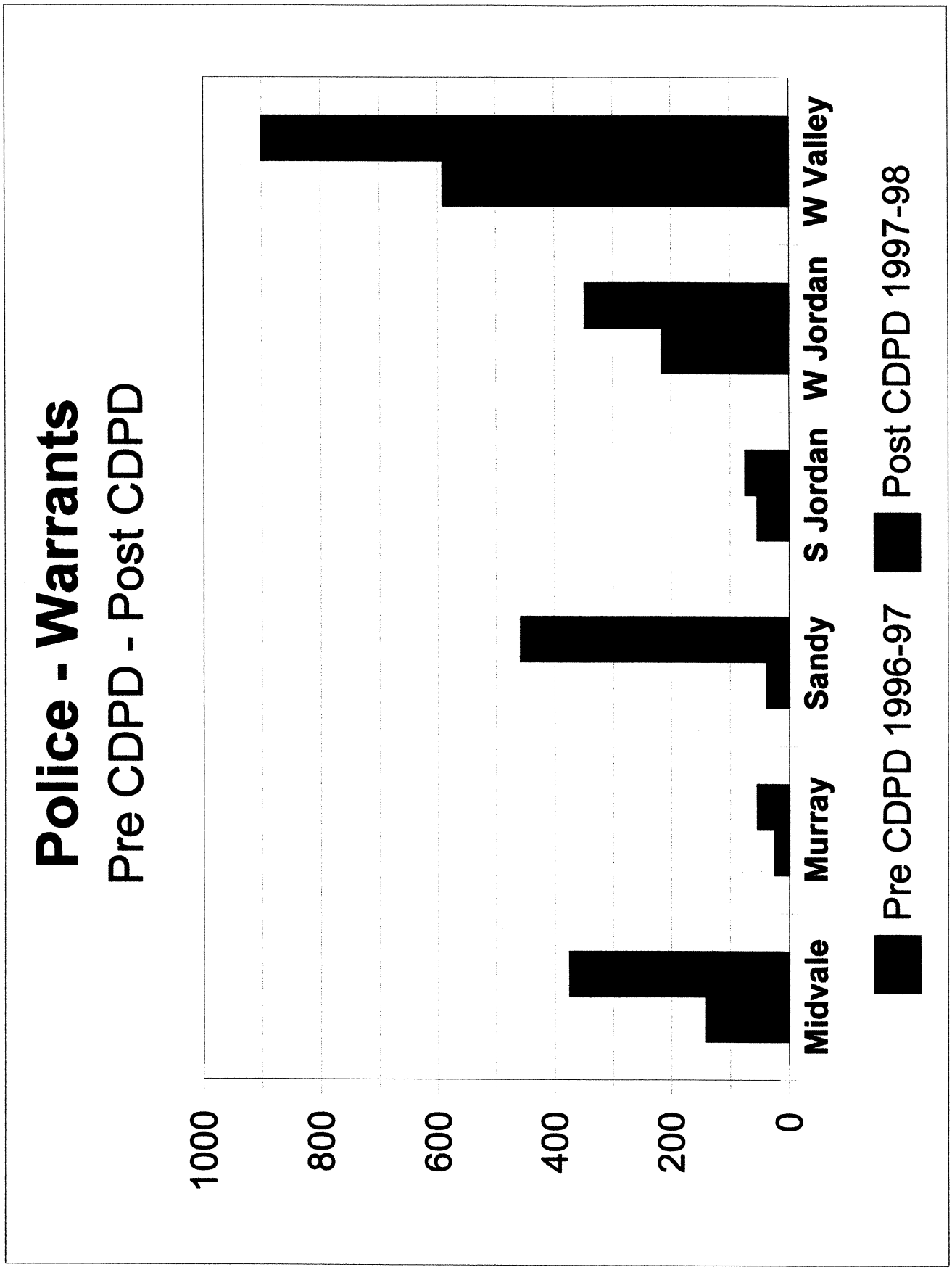
*Note: Information for Murray is an estimate for the total.

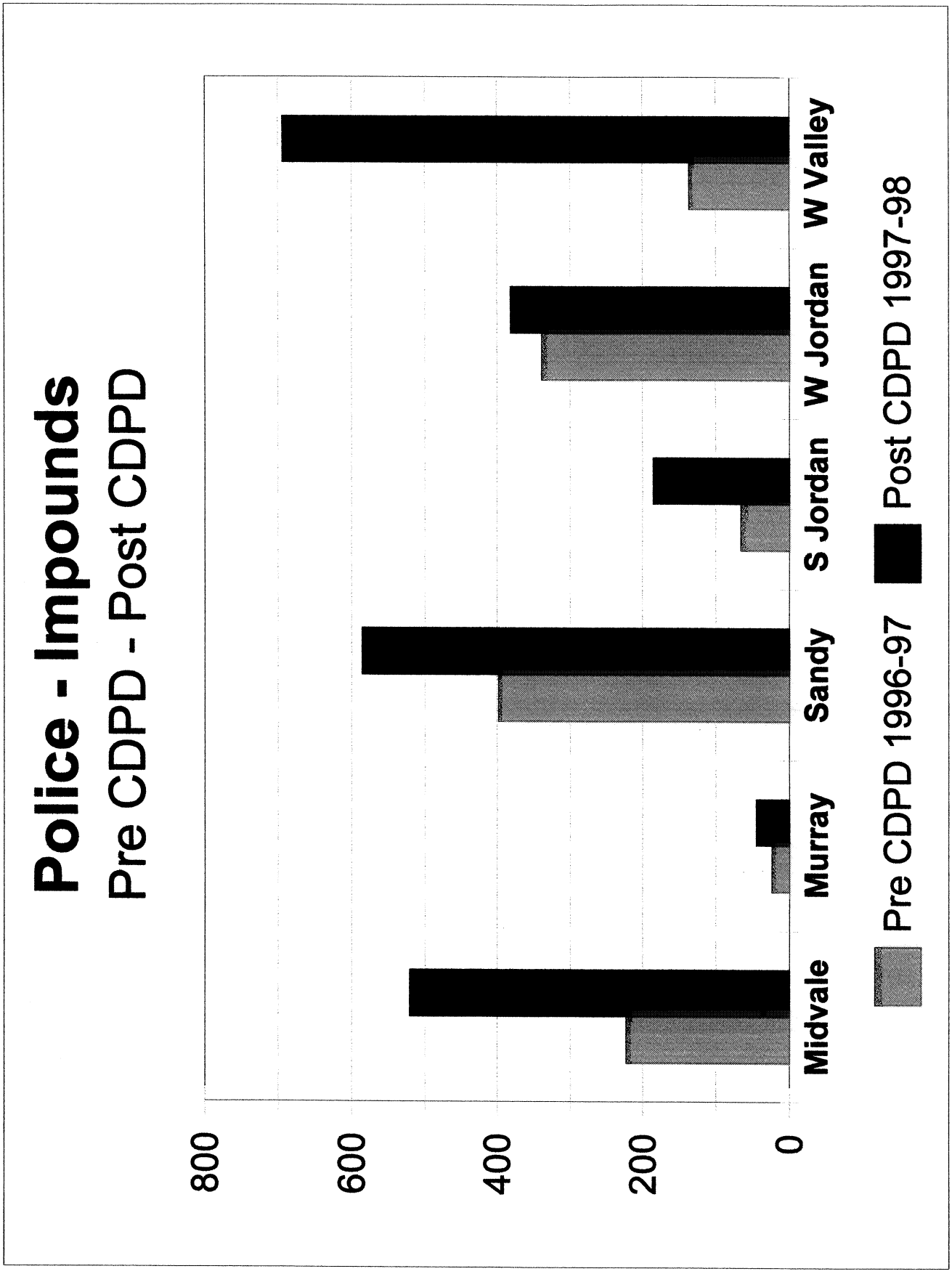
	1996	1997	1998
Midvale	16,908	18,748	
Murray	35,884	38,672	
Sandy	56,375	58,579	
South Jordan	11,401	12,577	
West Jordan	35,100	38,825	
West Valley	87,352	93,289	
	243,020	260,690	

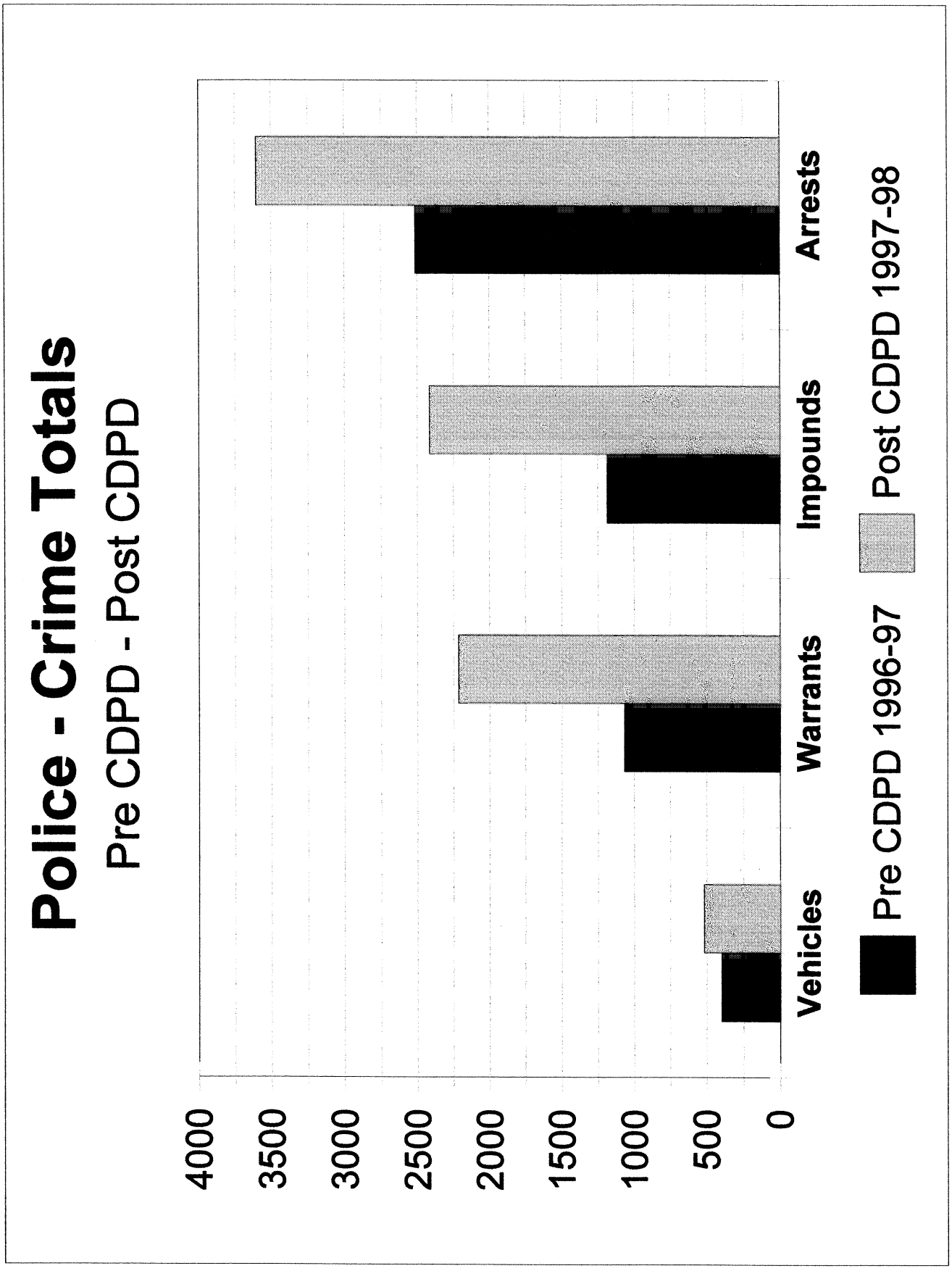
VALLEY EMERGENCY COMMUNICATIONS CENTER
POLICE DEPARTMENT CRIME CATEGORY COMPARISONS

Agency	Category	Pre CDPD 1996-97	Post CDPD 1997-98	% Increase
Midvale	Recovered Stolen Vehicle	45	74	64.44%
Murray	Recovered Stolen Vehicle	10	18	80.00%
Sandy	Recovered Stolen Vehicle	86	96	11.63%
S Jordan	Recovered Stolen Vehicle	28	20	-28.57%
W Jordan	Recovered Stolen Vehicle	32	60	87.50%
W Valley	Recovered Stolen Vehicle	200	253	26.50%
Vehicles	Totals	401	521	29.93%
Midvale	Warrants	141	376	166.67%
Murray	Warrants	26	55	111.54%
Sandy	Warrants	39	459	1076.92%
S Jordan	Warrants	55	75	36.36%
W Jordan	Warrants	217	349	60.83%
W Valley	Warrants	592	901	52.20%
Warrants	Totals	1070	2215	107.01%
Midvale	Vehicle Impounds	223	521	133.63%
Murray	Vehicle Impounds	24	45	87.50%
Sandy	Vehicle Impounds	398	586	47.24%
S Jordan	Vehicle Impounds	66	186	181.82%
W Jordan	Vehicle Impounds	339	382	12.68%
W Valley	Vehicle Impounds	136	694	410.29%
Impounds	Totals	1186	2414	103.54%
Midvale	MDT Related Reports	0	760	
Murray	MDT Related Reports	0	207	
Sandy	MDT Related Reports	0	346	
S Jordan	MDT Related Reports	0	118	
W Jordan	MDT Related Reports	7657	8339	
W Valley	MDT Related Reports	0	1848	
MDT Reports	Totals	7657	11618	51.73%
West Jordan Police	Arrests	2513	3602	43.33%


Police - Recovered Stolen Vehicles
Pre CDPD - Post CDPD
250
200
150
100
50
0
Midvale
Murray
Sandy
S Jordan
W Jordan
W Valley
Pre CDPD 1996-97
Post CDPD 1997-98


Police - Warrants
Pre CDPD - Post CDPD
1000
800
600
400
200
0
Midvale
Murray
Sandy
S Jordan
W Jordan
W Valley
Pre CDPD 1996-97
Post CDPD 1997-98


Police - Impounds
Pre CDPD - Post CDPD
800
600
400
200
0
Midvale
Murray
Sandy
S Jordan
W Jordan
W Valley
Pre CDPD 1996-97
Post CDPD 1997-98


Police - Crime Totals
Pre CDPD - Post CDPD
4000
3500
3000
2500
2000
1500
1000
500
0
Vehicles
Warrants
Impounds
Arrests
Pre CDPD 1996-97
Post CDPD 1997-98

CDPD MOBILE DISPATCH QUESTIONNAIRE
Officer Usage Level

Name: _____ **Date:** _____

Years of Service in Law Enforcement: ____ **Agency:** _____

Type of Modem In Use:

○ IBM Wireless ○ Sierra Portable ○ Sierra Trunk Modem

The following is a questionnaire that has been created for officers to rate issues in regards to the use of the CDPD messaging and voiceless dispatching system. Please answer each question using a numbered response from 1-5. Feel free to add your comments regarding each question.

1 = Dramatically less
2 = Less than average
3 = Median
4 = Above average
5 = Dramatically improved

1. Has the access to information changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments: _____

2. Has the content/completeness of information changed?

A. Rate the accuracy of the information coming back

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

B. Rate the speed of the information coming back

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments: _____

3. Has the amount of time you are on your voice radio changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments: _____

4. Has Messaging changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

5. Have MDT's changed your ability to do your job?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

6. Has vehicle enforcement changed because of the MDT?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

A. Have vehicle impounds increased because of the use of MDT?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

7. Has your level of communication with dispatch changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

8. Has your access/communication with other agencies changed? (Improved inter-agency case report sharing)

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

9. Has Messaging changed your ability to perform inter-departmental communications?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

10. Has your ability to transfer/receive secure information changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

11. In your opinion, does the increased access to information provided by the MDT lead to increased officer safety?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

12. In your opinion, has mobile dispatching, including messaging, improved job efficiency and communication between the officers and dispatch?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

Thank you for your participation!

CDPD MOBILE DISPATCH QUESTIONNAIRE
Dispatch Usage Level

Name: _____ **Date:** _____

Years of Service in Dispatch: _____ **Channel Position:** _____

The following is a questionnaire that has been created for dispatch to rate issues in regards to the use of the messaging and voiceless dispatching system. Please answer each question using a numbered response from 1-5. Feel free to add your comments regarding each question.

1 = Dramatically less
2 = Less than average
3 = Median
4 = Above average
5 = Dramatically improved

1. Has the access to information changed?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Comments: _____

2. Has the content/completeness of information changed?

A. Rate the accuracy of the information coming back

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B. Rate the speed of the information coming back

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Comments: _____

3. Has the amount of time you need to repeat information (i.e. address, call type, etc.) changed?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Comments: _____

4. Has the use of Messaging changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

5. Have MDT's changed your ability to do your job?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

6. Has dispatch involvement in traffic stops changed because of the MDT?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

7. Has your level of communication with the field units changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

8. Has your access/communication with other agencies changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

9. Has Messaging changed your ability to perform inter-departmental communications?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

10. Has your ability to transfer/receive secure information changed?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

11. In your opinion, does the increased access to information provided by the MDT lead to increased productivity?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

12. In your opinion, has mobile dispatching, including messaging, improved job efficiency and communication between the officers and dispatch?

❒ 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5

Comments:

Thank you for your participation!

CDPD MESSAGING USERS

AP&P	104
Bountiful PD	2
Brigham City PD	22
Davis County Sheriff	59
Davis County Metro Narc	1
Farmington PD	13
Granite School PD	22
Harrisville PD	2
Kaysville PD	12
Layton PD	66
Lehi PD	1
Logan PD	3
Midvale PD	50
Motor Vehicle PD	23
Murray PD	71
North Ogden PD	2
Orem PD	1
Provo PD	1
Riverdale PD	3
Salt Lake County DA	6
Salt Lake County Fire	29
Sandy PD	119
Salt Lake Youth Corrections	3
Salt Lake County DA Task Force	4
Salt Lake Metro Narc	11
South Jordan Fire	2
South Jordan PD	27
South Ogden PD	1
South Salt Lake PD	50
Utah County Sheriff	13
Utah Division of Investigations	22
Utah Highway Patrol	192
Valley Emergency Comm Center	30
Weber County Crime Unit	7
West Jordan Fire	11
West Jordan PD	96
West Valley Fire	8
West Valley Ordinance Enforce	11
West Valley PD	162
Woods Cross PD	9
Total Departments: 40	**Total Users: 1271**